

REMARKS

Applicant requests favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

The specification has been amended to place the subject application in better form. A new abstract has also been presented in accordance with preferred practice. No new matter has been added by these changes.

Claims 41-69 are presented for consideration in lieu of claims 1-40, which have been canceled without prejudice or disclaimer. Claims 41, 58 and 63 are independent. Claims 41-69 have been added to recite additional features of the invention. Support for these claims can be found in the application, as filed. Therefore, no new matter has been added.

Applicant requests favorable reconsideration and withdrawal of the rejections set forth in the above-noted Office Action.

Claims 1-40 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. The Examiner objected to specific recitations in several of these claims. Claims 1-40 having been canceled, this rejection has become moot and should be withdrawn. Nevertheless, the Examiner's comments were taken into consideration when presenting claims 41-69. Therefore, Applicant requests favorable reconsideration and withdrawal of this rejection.

Turning now to the art rejections, claims 1, 2, 5-7, 10, 12, 17, 19, 22, 24, 27, 29, 32, 33 and 40 were rejected under 35 U.S.C. § 102 as being anticipated by either U.S. Patent No. 6,414,743 to Nishi et al. or U.S. Patent No. 6,406,820 to Ota. Claims 3, 4, and 23 were rejected under 35 U.S.C. § 103 as being unpatentable over either the Nishi et al. patent or the Ota patent

in view of U.S. Patent No. 5,825,470 to Miyai et al. Claims 3, 4, 8, 9, 11, 13-16, 18, 20, 21, 23, 25, 26 and 28-31 were rejected under 35 U.S.C. § 103 as being unpatentable over either the Nishi et al. patent or the Ota patent in view of U.S. Patent No. 6,320,646 to Mouri. Claims 34-39 were rejected under 35 U.S.C. § 103 as being unpatentable over the Nishi et al. patent or the Ota patent in view of U.S. Patent No. 5,243,377 to Umatate et al. Applicant submits that the cited art, whether taken individually or in combination, does not teach many features of the present invention as previously recited in claims 1-40. Therefore, these rejections are respectfully traversed. Nevertheless, Applicant submits that independent claims 41, 58 and 63, for example, as presented, amplify the distinctions between the present invention and the cited.

In one aspect of the invention, independent claim 41 recites an exposure apparatus that includes a projection optical system, a substrate stage, a substrate transport system, and a position detection system. The projection optical system projects a pattern, which has been formed on a reticle, onto a photosensitive substrate. A projection region of the pattern, which region is formed on the substrate via the projection optical system, is formed at a position that is off-centered with respect to an optical axis of the projection optical system. The substrate stage is capable of holding and moving the substrate. The substrate transport system transports the substrate to the substrate stage and is disposed on the side of the projection region with respect to the optical axis. Also, the substrate transport system and the substrate stage are arranged in a divided space which is purged with inert gas. The position detection system detects an alignment mark on the substrate.

In another aspect of the invention, independent claim 58 recites an exposure apparatus that includes a projection optical system, a mask stage and a mask transport system. The projection optical system projects a mask pattern onto a photosensitive substrate. A projection region of the pattern, which region is formed on the substrate via the projection optical system is formed at a position that is off-centered with respect to an optical axis of the projection optical system and an illumination region on the mask is formed at a position that is off-centered with respect to the optical axis of the projection optical system. The mask stage is capable of holding and moving the mask. The mask transport system transports the mask to the mask stage. The mask transport system is disposed on the side of the illumination region with respect to the optical axis. The mask stage and the mask transport system are arranged in a divided space which is purged with inert gas.

In still another aspect of the invention, independent claim 63 recites an exposure apparatus that includes, among other features, a projection optical system, a substrate transport system and a position detection system. The projection optical system projects a mask pattern onto a photosensitive substrate. A projection region of the pattern, which region is formed on the substrate via the projection optical system, and an illumination region on the mask are formed at positions that are off-centered to the same side with respect to the optical axis of the projection optical system. The substrate transport system transports the substrate to the substrate stage. A mask transport system and the substrate transport system are disposed on the side of the projection optical region and illumination region with respect to the optical axis. The position detection system detects an alignment mark on the substrate. A system including at least one of

(i) a mask stage and the mask transport system and (ii) the substrate transport system and the substrate stage is arranged in a divided space which is purged with inert gas.

Accordingly, the present invention provides various exposure apparatus in which a space containing a transport system and a stage can be divided, with the divided space being purged with inert gas. Applicant submits that the cited art does not teach or suggest such features of the present invention, as recited in independent claims 41, 58 and 63.

The Nishi et al. patent teaches monitoring variations in transmittance of a projection optical system and a control exposure amount based on a monitoring result. The Nishi et al. patent in the background technology section suggests that a purge technique is disclosed in U.S. Patent No. 5,559,584. That patent discloses purging a path from a light source to a final optical element of a projection optical system, with inert gas, with the inert gas being blown out to a wafer. That patent also teaches that a reticle space can be enclosed so as to fill the space with inert gas, but that it is difficult to enclose a wafer space because of the high frequency of exchange of the wafers. Accordingly, Applicant submits that neither the Nishi et al. nor the '584 patent teaches or suggest purging a divided space containing a transport system and a stage, with inert gas, in the manner of the present invention recited in the independent claims.

Applicant submits that the remaining art cited does not teach or suggest the salient features of Applicant's present invention as recited in the independent claims.

Specifically the Ota '820 and '153 patents, as well as the Miyai et al. and Umatate et al. patents likewise do not teach or suggest purging a divided space containing a transport system

and a stage, with inert gas, in the manner of the present invention, as recited in the independent claims.

Similarly, the Mouri patent does not teach or suggest such features. That patent, in Figure 2, shows a semiconductor exposure apparatus having a reticle transport system and a wafer transport system inside the apparatus. According to that figure, air is merely circulated in the chamber of the apparatus 101. Accordingly, the Mouri patent likewise does not teach or suggest purging a divided space containing a transport system and a stage, with inert gas, in the manner of the present invention recited in the independent claims.

For the foregoing reasons, Applicant submits that the present invention, as recited in independent claims 41, 58 and 63, is patentably defined over the cited art, whether that art is taken individually or in combination.

The dependent claims also should be deemed allowable, in their own right, for defining other patentable features of the present invention in addition to those recited in their respective independent claims. Further individual consideration of these dependent claims is requested.

Applicant further submits that the instant application is in condition for allowance. Favorable reconsideration, withdrawal of the rejections set forth in the above-noted Office Action and an early Notice of Allowance are requested.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our address listed below.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Steven E. Warner", is written over a horizontal line.

Attorney for Applicant
Steven E. Warner
Registration No. 33,326

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200

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